

WHAT IS CLAIMED IS:

[C001] 1. An actively quenched lamp comprising:

a lamp; and

an active quenching means configured to quench said lamp.

[C002] 2. The actively quenched lamp of Claim 1, wherein said active quenching means is configured to receive a control signal T2 and to quench said lamp in response to the control signal T2.

[C003] 3. The actively quenched lamp of Claim 2, wherein said active quenching means comprises a high-voltage, high current switch, wherein said high-voltage, high current switch opens in response to the control signal T2.

[C004] 4. The actively quenched lamp of Claim 3, wherein said active quenching means is further configured to receive an initial control signal T0, and wherein said high-voltage, high current switch closes in response to the initial control signal T0.

[C005] 5. The actively quenched lamp of Claim 3, further comprising a timing generator configured to supply the control and initial control signals T2, T0 and to supply a lamp trigger signal T1, wherein said lamp is activated in response to the lamp trigger signal T1.

[C006] 6. The actively quenched lamp of Claim 3, wherein said timing generator comprises a computer.

[C007] 7. The actively quenched lamp of Claim 3, wherein said active quenching means further comprises a switch drive circuit configured to receive a logic level signal and to generate a switch-drive signal in response, wherein the control signal T2 is a logic level signal, and wherein said high-voltage, high current switch

opens in response to the switch-drive signal TS2 that corresponds to the control signal T2.

**[C008]** 8. The actively quenched lamp of Claim 7, wherein the switch-drive signal TS2 is a switch-drive voltage signal TS2.

**[C009]** 9. The actively quenched lamp of Claim 3, wherein said high-voltage, high current switch comprises a power semiconductor switch.

**[C010]** 10. The actively quenched lamp of Claim 3, wherein said high-voltage, high current switch comprises an insulated gate bipolar transistor (IGBT).

**[C011]** 11. The actively quenched lamp of Claim 9, wherein the power semiconductor switch is selected from the group consisting of a silicon controlled rectifier, a gate turn-on thyristor, a MOSFET, a insulated gate commutated thyristor ("IGCT"), and combinations thereof.

**[C012]** 12. The actively quenched lamp of Claim 1, wherein said lamp comprises a halogen lamp.

**[C013]** 13. The actively quenched lamp of Claim 1, wherein said lamp comprises a flash lamp.

**[C014]** 14. The actively quenched lamp of Claim 1, wherein said lamp comprises an arc lamp.

**[C015]** 15. An infrared ("IR") thermography imaging system comprises:

at least one lamp configured to heat a surface of an object to be imaged;

at least one active quenching means configured to quench said at least one lamp; and

an IR camera configured to capture a plurality of IR image frames of the object.

**[C016]** 16. The IR thermography imaging system of Claim 15, wherein said active quenching means is configured to receive an initial control signal T0 and a control signal T2, and wherein said active quenching means is further configured to allow a current flow I to said lamp in response to the initial control signal T0 and to quench said lamp in response to the control signal T2.

**[C017]** 17. The IR thermography imaging system of Claim 16, wherein said active quenching means comprises a high-voltage, high current switch, wherein said high-voltage, high current switch closes in response to the initial control signal T0 and opens in response to the control signal T2.

**[C018]** 18. The IR thermography imaging system of Claim 17, further comprising a timing generator configured to supply the initial control signal T0 and the control signal T2 and to supply a lamp trigger signal T1, wherein said lamp is activated in response to the lamp trigger signal T1.

**[C019]** 19. The IR thermography imaging system of Claim 16, wherein said active quenching means further comprises a switch drive circuit configured to receive a logic level signal and to generate a switch-drive signal in response, wherein the control signal T2 is a logic level signal, and wherein said high-voltage, high current switch opens in response to the switch-drive signal that corresponds to the control signal T2.

**[C020]** 20. The IR thermography imaging system of Claim 19, wherein the switch-drive signal is a switch-drive voltage signal.

**[C021]** 21. The IR thermography imaging system of Claim 17, wherein said high-voltage, high current switch comprises a power semiconductor switch.

**[C022]** 22. The IR thermography imaging system of Claim 17, wherein said high-voltage, high current switch comprises an insulated gate bipolar transistor.

**[C023]** 23. The IR thermography imaging system of Claim 22, wherein said lamp comprises a halogen lamp.

**[C024]** 24. The IR thermography imaging system of Claim 22, wherein said lamp comprises a flash lamp.

**[C025]** 25. A method for actively controlling a duration of a flash for infrared ("IR") thermography, said method comprising:

generating an initial control signal T0, a lamp control signal T1, and a control signal T2;

activating a quenching means in response to the initial control signal T0 to allow current I to flow to a lamp; activating the lamp in response to the lamp trigger signal T1; and

turning off the quenching means in response to the control signal T2 to cut off the current I to the lamp.

**[C026]** 26. The method of Claim 25, wherein the initial control signal T0 and the control signal T2 comprise logic level signals, and wherein said method further comprises:

generating a switch-drive signal TS2 in response to the control signal T2,

wherein said turning off the quenching means comprises opening a switch in response to the switch-drive signal TS2.

**[C027]** 27. The method of Claim 26, wherein the switch-drive signal TS2 is a switch-drive voltage signal TS2.